Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A downhole measurement tool, comprising:

a substantially cylindrical tool body having a cylindrical axis;

at least one acoustic sensor deployed on the tool body, the acoustic sensor including a piezo-composite transducer element with anterior and posterior faces, the piezo-composite transducer in electrical communication with an electronic control module via conductive electrodes disposed on each of said faces; and

the piezo-composite transducer element including regions of piezoelectric material deployed in a matrix of a substantially non piezoelectric polymeric material, the regions extending through a thickness of the transducer element in at least one dimension, the polymeric material having a glass transition temperature of greater than about 250 degrees C.

2. (Original) The downhole tool of claim 1, wherein the piezoelectric material is selected from the group consisting of lead zirconate titanates and lead metaniobates.

3. (Original) The downhole tool of claim 1, wherein the piezoelectric material has a Curie temperature greater than or equal to about 250 degrees C.

4. (Original) The downhole tool of claim 1, wherein the piezoelectric material has a coupling coefficient of greater than or equal to about 0.3.

5. (Cancelled).

6. (Currently Amended) The downhole tool of ~~claim 5~~ claim 1, wherein the polymeric material is an epoxy resin.

7. (Currently Amended) The downhole tool of ~~claim 5~~ claim 1, wherein the polymeric material has a coefficient of thermal expansion less than about 100 parts per million per degree C.

8. (Cancelled).

9. (Original) The downhole tool of claim 1, wherein the regions of piezoelectric material comprise a periodic array of spaced piezoelectric material posts.

10. (Original) The downhole tool of claim 9, wherein the piezo-composite transducer element is a product of the process comprising:

providing a piezo-ceramic disk having first and second faces;

cutting a first set and a second set of grooves in the first face, the grooves in the first set being substantially orthogonal to the grooves in the second set, wherein removal of piezo-ceramic material in said groove cutting is operative to shape the piezoelectric material posts;

casting the non piezoelectric material into the grooves to form, in combination with the piezo-ceramic disc, a specimen of piezo-composite material having first and second faces corresponding substantially to those of the piezo-ceramic disk;

polishing the specimen to a predetermined thickness; and

disposing conductive electrodes on each of the first and second faces of the specimen.

11. (Original) The downhole tool of claim 1, wherein the piezo-composite transducer element comprises a laminate including alternating layers of the piezoelectric material and the non piezoelectric material.

12 through 21. (Cancelled).

22. (Original) The downhole tool of claim 1, wherein the conductive electrodes comprise gold.

23. (Original) The downhole tool of claim 1, in which the piezo-composite transducer element is deployed in a housing, and further comprising a pressure equalization layer disposed on an interior surface of the housing.

24. (Original) The downhole tool of claim 23, wherein the pressure equalization layer includes silicone oil.

25. (Original) The downhole tool of claim 1, in which the at least one acoustic sensor comprises first, second, and third acoustic sensors, each acoustic sensor including corresponding first, second, and third piezo-composite transducer elements.

26. (Original) The downhole tool of claim 25, in which the tool body has a periphery, and wherein the first, second, and third acoustic sensors are disposed substantially equidistantly about the periphery of the tool body.

27. (Original) The downhole tool of claim 1, wherein the electronic control module is deployed in the tool body.

28. (Original) The downhole tool of claim 1, in which the tool body is couplable with a drill string.

29. (Original) The downhole tool of claim 1, in which the downhole tool is selected from the group consisting of a logging while drilling tool and a measurement while drilling tool.

30. (Original) The downhole tool of claim 1, wherein the at least one acoustic sensor further comprises a laminate including a backing layer deployed nearer to the cylindrical axis from the piezo-composite transducer.

31. (Original) The downhole tool of claim 1, wherein the at least one acoustic sensor further comprises a laminate including at least one matching layer deployed further away from the cylindrical axis than the piezo-composite transducer.

32. (Original) The downhole tool of claim 1, wherein the at least one acoustic sensor further comprises a laminate including the piezo-composite transducer and a barrier layer, the barrier layer deployed on an outermost surface of the laminate furthest away from the cylindrical axis.

33 through 80. (Cancelled).

81. (Currently Amended) An acoustic sensor, comprising:

a piezo-composite transducer element including regions of piezoelectric material deployed in a matrix of a substantially non piezoelectric polymeric material, the regions extending through a thickness of the transducer element in at least one dimension, the polymeric material having a glass transition temperature of greater than about 250 degrees C;

the piezoelectric material having a Curie temperature greater than or equal to about 250 degrees C;

the piezo-composite transducer element including conductive electrodes disposed on first and second faces thereof; and

the acoustic sensor being configured for use in a downhole measurement tool.

82. (Currently Amended) A method for fabricating a downhole measurement tool, the method comprising:

(a) providing a substantially cylindrical tool body having an electronic control module, the tool body being couplable with a drill string;

(b) providing at least one acoustic sensor including a piezo-composite transducer element with anterior and posterior faces, the piezo-composite transducer element including regions of piezoelectric material deployed in a matrix of substantially non piezoelectric polymeric material, the regions extending through a thickness of the transducer element in at least one dimension, the polymeric material having a glass transition temperature of greater than about 250 degrees C, the piezo-composite transducer element further including conductive electrodes disposed on each of said faces;

(c) deploying the at least one acoustic sensor on the tool body in electrical communication with the electronic control module via said conductive electrodes, the at least one acoustic sensor operable to transmit and receive acoustic signals in a borehole.

83 through 85. (Cancelled).